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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/512,394	02/24/2000	Kyou-Yoon Sheem	3364.P039	5787

7590

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EXAMINER

MERCADO, JULIAN A

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/512,394

Applicant(s)

SHEEM ET AL

Examiner

Julian Mercado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-6 and 8-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-6, 8-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 30, 2004 has been entered.

***Remarks***

Claims 1, 3-6 and 8-10 are pending.

***Double Patenting***

The rejection of claims 1, 3-6 and 8-10 under the judicially created doctrine of double patenting over claims 1-9 of U. S. Patent No. 6,355,377 B1 and over claims 1-7 of U.S. Patent No. 6,395,427 B1 has been withdrawn.

By the present amendment now reciting the limitation "wherein the metal is not in the form of a metal compound", the scope of the present claims precludes the presence of other metals in the carbon shell such as metal boride and metal carbide present in the semi-crystalline carbon shells of the '377 Patent and the '427 Patent.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-6 and 8-10 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a semi-crystalline structure when boron (B) is present in the carbon shell, does not reasonably provide enablement for such a semi-crystalline structure for the other metal components. See specification on page 18 line 10 et seq. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with the amendment to independent claims 1 and 6 now reciting a semi-crystalline structure *per se*.

Claims 1, 3-6 and 8-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Independent claims 1 and 6 have been amended to recite that the carbon shell has a semi-crystalline structure without a peak at less than 700° C. The specification on page 18 line 15 et seq. discloses that observed exothermic peaks at temperatures of 700°C or less is indicative of amorphous carbon, while temperatures of 700°C or more is indicative of crystalline carbon. Thus, the specification does not adequately describe how a semi-crystalline structure (which in a broad sense may be understood to have both crystalline and amorphous forms) may be

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measured via differential thermal analysis via an observed exothermic peak at temperatures of 700°C or more while at the same time excluding any observable peaks less than that temperature.

Claims 3-5 and 8-10 are rejected under 35 U.S.C. 112, first paragraph, as being dependent upon a rejected base claim.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-6 and 8-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claims 1 and 6 have been amended to recite the limitation “wherein the metal is not in the form of a metal compound”. This limitation is considered indefinite as it attempts to define the invention in terms of what it did not invent rather than distinctly and particularly pointing out what is actually invented. *In re Schechter*, 205 F.2d 185, 98 USPQ 144 (CCPA 1953). As a suggestion, replacing “wherein the metal is not in the a form of a metal compound” with --wherein the metal is an elemental metal-- would obviate this ground of rejection.

Claims 3-5 and 8-10 are rejected under 35 U.S.C. 112, second paragraph, as being dependent upon a rejected base claim.

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. in view of either Yamada et al. or Peled et al, and further in view of Mao et al.

The rejection is maintained for the reasons of record and for the additional reasons to follow in view of applicant's amendment.

The examiner acknowledges applicant's submission of an attached graph illustrating the differential thermal analysis result of Ueda et al. At the outset, the examiner notes however that the legend of the graph indicating which lines correspond to MGC-0, MGC-10 etc. are not mutually discernable based on the identical font and thickness of the lines shown. Thus, the examiner is unable to interpret the data in the graph independently from applicant's own remarks. Applicant is advised to resubmit the graph with each line appropriately labeled with its corresponding descriptor. Absent of further clarification, and since it has been established that a shoulder at 700°C or more is indicative of crystalline carbon, Ueda et al. is maintained to teach or at least suggest a negative active material having a crystalline carbon core [311] coated with a low crystallinity or amorphous carbon layer [312], thus, it is reasonably expected for the active material in Ueda et al. to naturally flow to inherently have a shoulder at 700°C or more via differential thermal analysis. *In re Best*, 195 USPQ at 433, footnote 4 (CCPA

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1977) and *In re Spada*, 15 USPQ 2d 1655 (Fed. Cir. 1990, see Ueda et al. at col. 8 line 5-13) As to this carbon shell being semi-crystalline, Ueda's teaching of layer [312] as a low crystallinity/amorphous layer is maintained as being in reference to the carbon layer [312] having a continuum in structure ranging from, e.g. amorphous, semi-crystalline and crystalline forms. In support thereof, Mao is relied upon to teach that "carbon materials are substantially amorphous, although it will be appreciated that they could be partially or completely crystalline or amorphous but possessing crystalline inclusions." (see Mao, col. 3 line 7-10)

As to Yamada teaching a triple layer wherein the third layer is a carbon layer, while this argument may have merit the scope of the present claims do not preclude a third layer as the outer layer, contrary to applicant's assertions that the claimed invention is limited to a double layer. The claimed carbon shell is merely recited as being formed around a central core and not necessarily an "outer" carbon shell.

With respect to arguments against Peled, applicant submits that the patentee's teaching of an alkaline earth metal salt, *inter alia*, is in effect a metal compound. This is not persuasive, as it is the examiner's position that metals salts do not fall under the definition of a compound material.

Arguments against Mao et al. appear to be directed to this reference failing to remedy alleged differences between Ueda et al. and the present claims. However, in view of Ueda et al. being maintained for the reasons discussed above, the rejection when further in view of Mao et al. is subsequently maintained for the reasons discussed in the previous Office Action. It is noted, however, that Mao et al. was relied upon in further support of the examiner's reasoning, i.e. "carbon materials are substantially amorphous,

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although it will be appreciated that they could be partially or completely crystalline or amorphous but possessing crystalline inclusions." (col. 3 line 7-10)

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to be 'Julian Mercado', enclosed within a large, loopy oval shape.

Patrick Ryan  
SBE-AU1745